

01/13/00

jc584 U.S. PTO

FORM PTO-1082

Attorney
Docket No.: ATOMIC-10

THE COMMISSIONER OF PATENTS AND TRADEMARKS
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Sir:

Transmitted herewith for filing is the patent application of

Inventor: Douglas J. Toth

for: STRAP CONNECTING BUCKLE

Enclosed are:

- ☒ 6 informal sheets of drawing.
- ☐ An assignment of the invention to _____
- ☐ A certified copy of a _____ application.
- ☐ An associate power of attorney.
- ☒ A verified statement to establish small entity status under 37 CFR 1.9 and 37 CFR 1.27.
- ☒

The filing fee has been calculated as shown below:

	(Col. 1)	(Col. 2)
FOR:	NO. FILED	NO. EXTRA
BASIC FEE		
TOTAL CLAIMS	10 -20=	0
INDEP CLAIMS	1 -3=	0
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENTED		

☒ If the difference in Col. 1 is less than zero, enter "0" in Col. 2

SMALL ENTITY	
RATE	FEE
	\$ 345.00
\$ 9	0
\$ 39	0
\$ 130	0
TOTAL	\$ 345.00

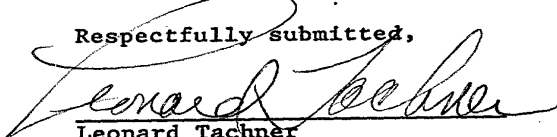
OTHER THAN A SMALL ENTITY	
RATE	FEE
	\$
\$ 18	\$
\$ 78	\$
\$ 260	\$
TOTAL	\$

- ☐ Please charge my Deposit Account No. 06-0930 in the amount of \$_____. A duplicate copy of this sheet is enclosed.
- ☒ A check in the amount of \$ 345.00 to cover the filing fee is enclosed.
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 - ☐ Any patent application processing fees under 37 CFR 1.17.
 - ☐ The issue fee set in 37 CFR 1.18 at or before mailing of the Notice of Allowance, pursuant to 37 CFR 1.311(b).
 - ☐ Any filing fees under 37 CFR 1.16 for presentation of extra claims.

CERTIFICATE OF EXPRESS MAILING
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JANUARY 13, 2000

(Date of Deposit)
LEONARD TACHNER

Name of Applicant, Assignee or Registered Firm
Leonard Tachner 1/13/2000
(Signature)

Respectfully submitted,

Leonard Tachner
Attorney for the Applicant(s)
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09/483145
01/13/00

**STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) & 1.27(b))—INDEPENDENT INVENTOR**

Docket Number (Optional)

ATOMIC-10

Applicant, Patentee, or Identifier: Douglas J. Toth

Application or Patent No.: _____

Filed or Issued: January 13, 2000

Title: STRAP CONNECTING BUCKLE

As a below named inventor, I hereby state that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees to the Patent and Trademark Office described in:

- ☒ the specification filed herewith with title as listed above.
☐ the application identified above.
☐ the patent identified above.

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern, or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ No such person, concern, or organization exists.
☐ Each such person, concern, or organization is listed below.

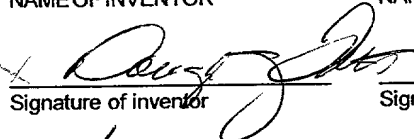
Separate statements are required from each named person, concern, or organization having rights to the invention stating their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

Douglas J. Toth
NAME OF INVENTOR

NAME OF INVENTOR

NAME OF INVENTOR


Signature of inventor

Signature of inventor

Signature of inventor

1/13/2000
Date

Date

Date

Separator Sheet



AAA

Application Text

Place Papers behind this sheet in the following order:

1. Preliminary Amendment
2. Specification (English Language Only)
3. Claims
4. Abstract

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention relates generally to the field of releasible buckles such as those used for securing a strap to a post on a piece of sporting equipment. The invention pertains more specifically to a highly secure locking buckle especially suited to applications requiring resistance to severe forces and yet quick and easy release when release is desired.

BACKGROUND ART

Quick release buckles have become prolific in sports equipment. There are a large number of applications in golf equipment and diving equipment for example where quick release, strap locking buckles are used advantageously for securing various kinds of equipment. Such equipment includes for example, golf bags and buoyancy jackets both of which have buckled straps for carrying or securing equipment. Buckles for such applications have to be capable of resisting a modest amount of force and yet be easily released to permit quick unbuckling. Moreover, in some applications, the buckle must be both lockable and releasible with only one hand. One such one-hand application is the swim fin strap. Furthermore, a swim fin strap is subject to especially high forces due to the nature of the use of swim fins, namely, being forced up and down in water to propel a diver or snorkeler. In order to facilitate one-hand operation, a swim fin buckle strap will have a buckle at each end for attachment to a fixed post or pin which is affixed on each side of the fin. The buckle for attachment to such posts or pins, must be easy to attach, capable of withstanding constant tension and very high

1 and frequent peak forces which would readily force open
2 conventional strap buckles.

3

4 It would thus be highly advantageous to have a strap connecting
5 buckle capable of one-hand operation for connection to a post or
6 pin and designed for withstanding extreme forces of tension while
7 still being easy to connect and to disconnect.

8

SUMMARY OF THE INVENTION

The present invention comprises a one-hand operated strap buckle capable of withstanding high forces and yet simple to operate and easily connected to a post and disconnected from a post. In a preferred embodiment, the buckle comprises upper and lower cases, the latter forming a slot for receiving a post with a flat head. When connected to a post, the buckle is secured to the post by a pair of swing arms terminating at locking hooks. The position of the swing arms is normally closed, but may be readily altered to an open position by a pair of opposed spring-loaded release tabs which when compressed toward one another, open the swing arms and separate the locking hooks. The buckle of the invention also comprises a strap release which is spring-loaded and normally engages the teeth of a strap by employing a spring-loaded catch which can be rotated away from the strap with tilting of the strap release around a fulcrum bearing. The locking hooks of the preferred embodiment, when in their locked position, assure a secure connection to the post which connection can withstand very high forces. Yet the locking hooks are easily separated when it is desired to release the strap from the post by simply squeezing the release tabs towards one another.

OBJECTS OF THE INVENTION

It is therefore a principal object of the present invention to provide a strap connecting buckle especially suited for quick connection to and release from a fixed post for one-hand operation.

It is another object of the invention to provide a quick release strap buckle which can withstand high tensile stress without inadvertent release.

It is yet another object of the invention to provide a strap buckle suitable for one-hand operation for connection to and release from a stationary post by simple compression of a pair of opposed release tabs.

BRIEF DESCRIPTION OF THE DRAWINGS

The aforementioned objects and advantages of the present invention, as well as additional objects and advantages thereof, will be more fully understood hereinafter as a result of a detailed description of a preferred embodiment when taken in conjunction with the following drawings in which:

FIG. 1 is a three-dimensional drawing showing a preferred embodiment of the invention in its fully assembled configuration;

FIG. 2 is a drawing similar to FIG. 1, but with the upper case removed to reveal a post to which the buckle is connected;

FIG. 3 is a drawing similar to FIG. 2 but with the strap release removed and the post removed;

FIG. 4 is a three-dimensional drawing showing the bottom of the buckle with an attached post;

FIG. 5 is a drawing similar to FIG. 4, but with the lower case removed;

FIG. 6 is a view similar to FIG. 3, but showing the buckle in the opened position;

FIG. 7 is a cross-sectional side view of a fully assembled buckle shown connected to a post;

FIG. 8 is an elevational view of a strap that may be used with the buckle of the invention;

1 FIG. 9 is a side partial view of the strap of FIG. 8; and

2
3 FIG. 10 is a view of a swim fin illustrating the position of
4 one or more posts for receiving a corresponding number of buckles
5 of the invention.
6

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to the accompanying drawings it will be seen that in accordance with a preferred embodiment of the invention, a strap locking buckle assembly 10 comprises a lower case 12 and an upper case 14. Buckle assembly 10 is normally closed but is easily opened by mutual compression of release tabs 16 and 18. A strap release 20 permits adjustment of the buckle assembly 10 relative to a strap which will become evident hereinafter. As seen in FIG. 1, buckle assembly 10 has a slotted opening 22 to receive a stationary post 27 of a swim fin 50 (see FIG. 10) to which connection is to be made.

As seen best in FIGS. 2-7, buckle assembly 10 also comprises swing arms 24 and 26 which terminate in respective locking hooks 28 and 30. The swing arms are shaped to provide a generally rectangular post locking aperture 32 for receiving and retaining a post 27 having an enlarged head 25. The locked configuration is shown in FIG. 3 and the unlocked or release configuration is shown in FIG. 6. It will be noted that in the locked configuration of FIG. 3, release tabs 16 and 18 are farthest apart. In the release configuration of FIG. 6, release tabs 16 and 18 have been compressed towards one another and are at their closest positions. Locking hooks 28 and 30 are spring-loaded by means of arm springs 36 and 38 which are integrally formed with and extend from spring arms 24 and 26, respectively. A pair of spring stops 31 and 33 load the arm springs 36 and 38 causing the swing arms 24 and 26 to automatically return to the locked configuration of FIG. 3 when release tabs 16 and 18 are no longer compressed toward each other. Swing arms 24 and 26 both move angularly about a fulcrum 34 which may be in the form of a rivet or other fastener seen best in FIG. 7. As seen best in FIG. 2, when the buckle assembly 10 engages and locks a post 27, the head

1 25 of the post resides just above the swing arms with the shaft
2 of the post firmly locked into the locking aperture 32. The
3 enlarged post head prevents upward release of the buckle assembly
4 10. As long as locking hooks 28 and 30 are in their locked
5 configuration seen in FIGs. 2 and 3, the buckle can resist very
6 large pulling forces without releasing the post. However, by a
7 simple compression of release tabs 16 and 18, locking hooks 28
8 and 30 separate and allow the buckle assembly 10 to be removed
9 from post 27.

10
11 The operation of strap release 20 will be apparent from FIGs.
12 3, 5 and 7. As seen in those figures, strap release 20 is
13 mounted for a rocking motion about a pair of bearings 23, each
14 positioned in a bearing recess 35. A release spring arm 29
15 extends diagonally and downwardly and contacts a spring stop 37.
16 The upper surface of strap release 20 has a knurled or scored
17 portion 39 which facilitates frictional engagement to rotate stop
18 release 20 about the bearings 23 and against the spring
19 resistance caused by release spring 29 engaging spring stop 37.
20

21 The buckle assembly 10 receives a strap 42 shown in FIGs. 8 and
22 9. As seen in FIG. 7, the strap 42 is wrapped around a strap
23 roller 40. A plurality of spaced teeth 44 are mounted on the
24 strap. The strap release 20 has a catch 21 extending toward the
25 roller 40 and engaging teeth 44. When strap release 20 is
26 rotated toward fulcrum 34, the catch is raised to permit strap 42
27 to be adjusted around roller 40.
28

29 Having thus disclosed a preferred embodiment of the invention,
30 it being understood that modifications and additions to the
31 disclosed embodiment are contemplated and that the described
32 details are merely illustrative of the invention, what is claimed
33 is:
34

1 **ATOMIC-10**

2
3 **STRAP CONNECTING BUCKLE**

4
5
6 **ABSTRACT OF THE DISCLOSURE**

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8
9 A one-hand operated strap buckle capable of withstanding high
10 forces and yet simple to operate and easily connected to a post
11 and disconnected from a post. In a preferred embodiment, the
12 buckle comprises upper and lower cases, the latter forming a slot
13 for receiving a post with a flat head. When connected to a post,
14 the buckle is secured to the post by a pair of swing arms
15 terminating at locking hooks. The position of the swing arms is
16 normally closed, but may be readily altered to an open position
17 by a pair of opposed spring-loaded release tabs which when
18 compressed toward one another, open the swing arms and separate
19 the locking hooks. The buckle of the invention also comprises a
20 strap release which is spring-loaded and normally engages the
21 teeth of a strap by employing a spring-loaded catch which can be
22 rotated away from the strap with tilting of the strap release
23 around a fulcrum bearing. The locking hooks of the preferred
24 embodiment, when in their locked position, assure a secure
25 connection to the post which connection can withstand very high
26 forces. Yet the locking hooks are easily separated when it is
27 desired to release the strap from the post by simply squeezing
28 the release tabs towards one another.

Separator Sheer



Miscellaneous Material Includes:

1. Drawings
2. Oath or Declaration
3. Foreign language specification
4. Sequence listing
5. Computer listing
6. Appendices

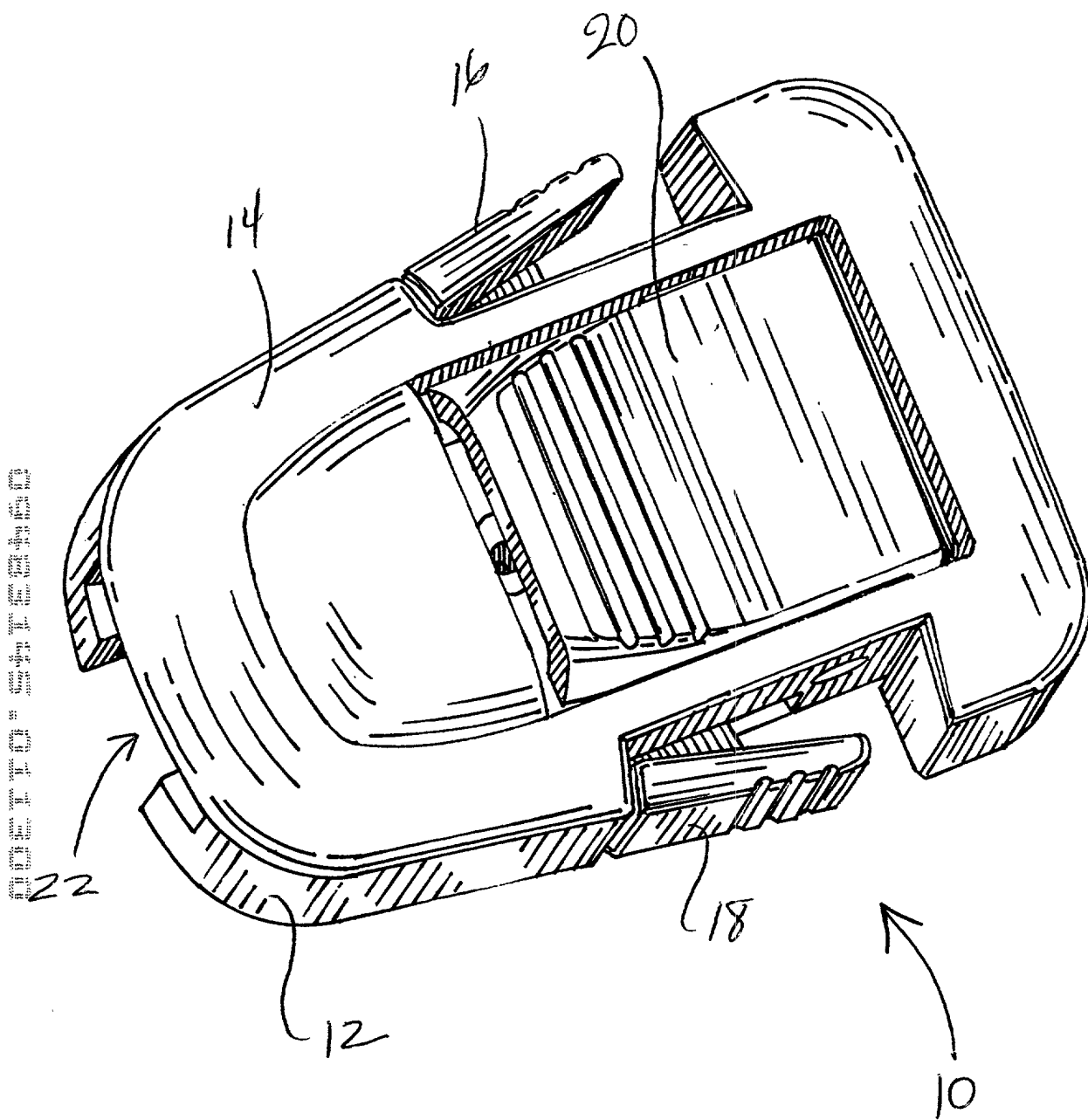


FIG. 1

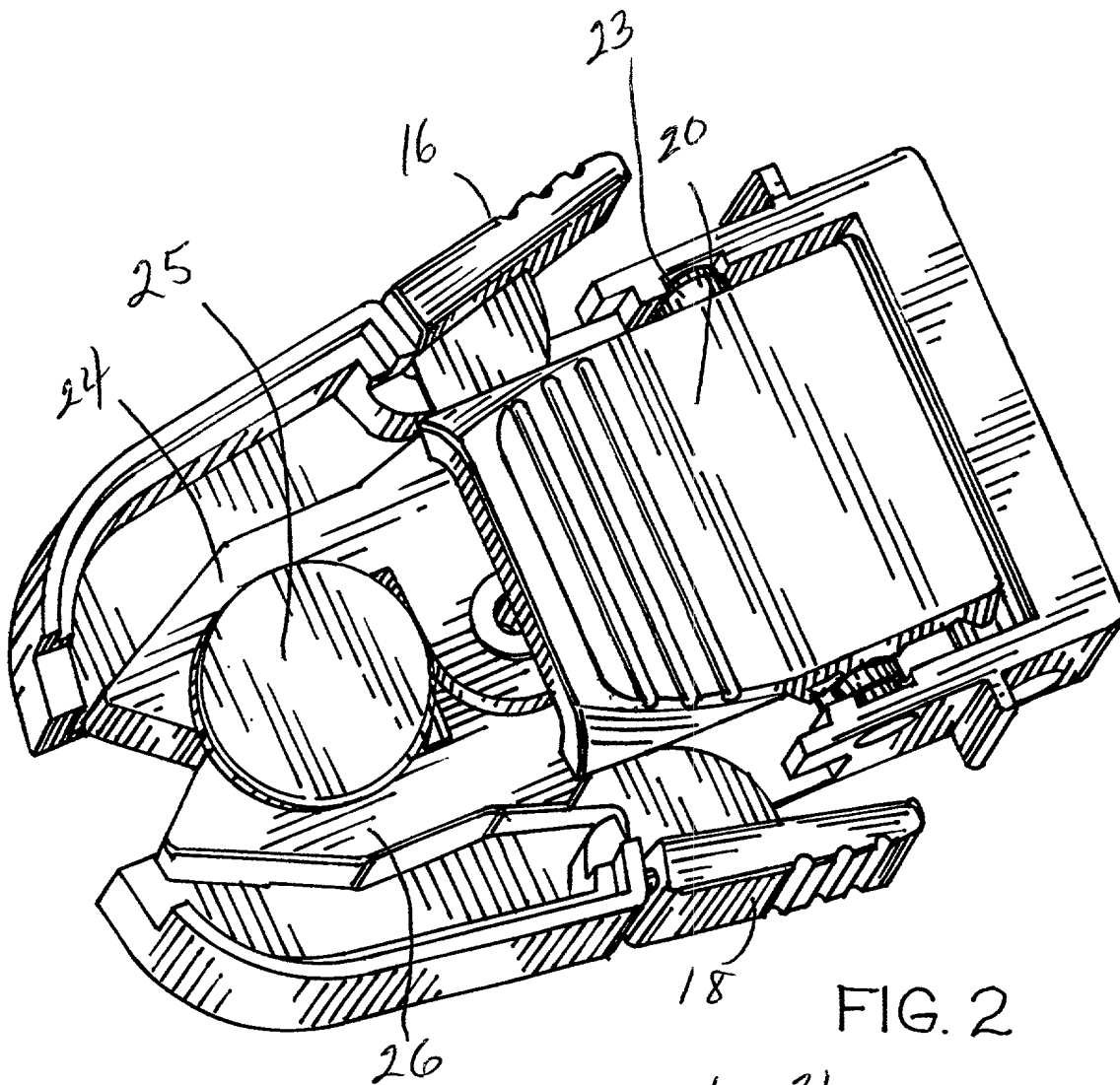


FIG. 2

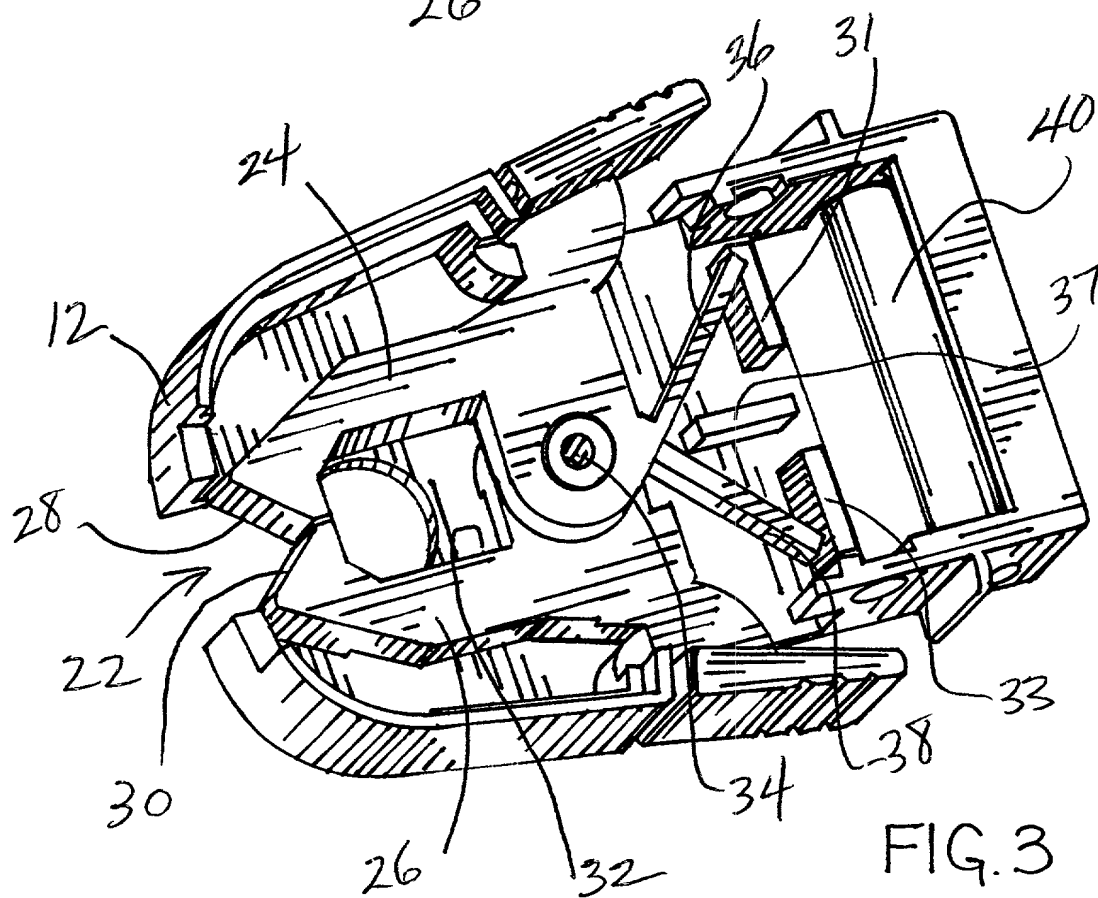
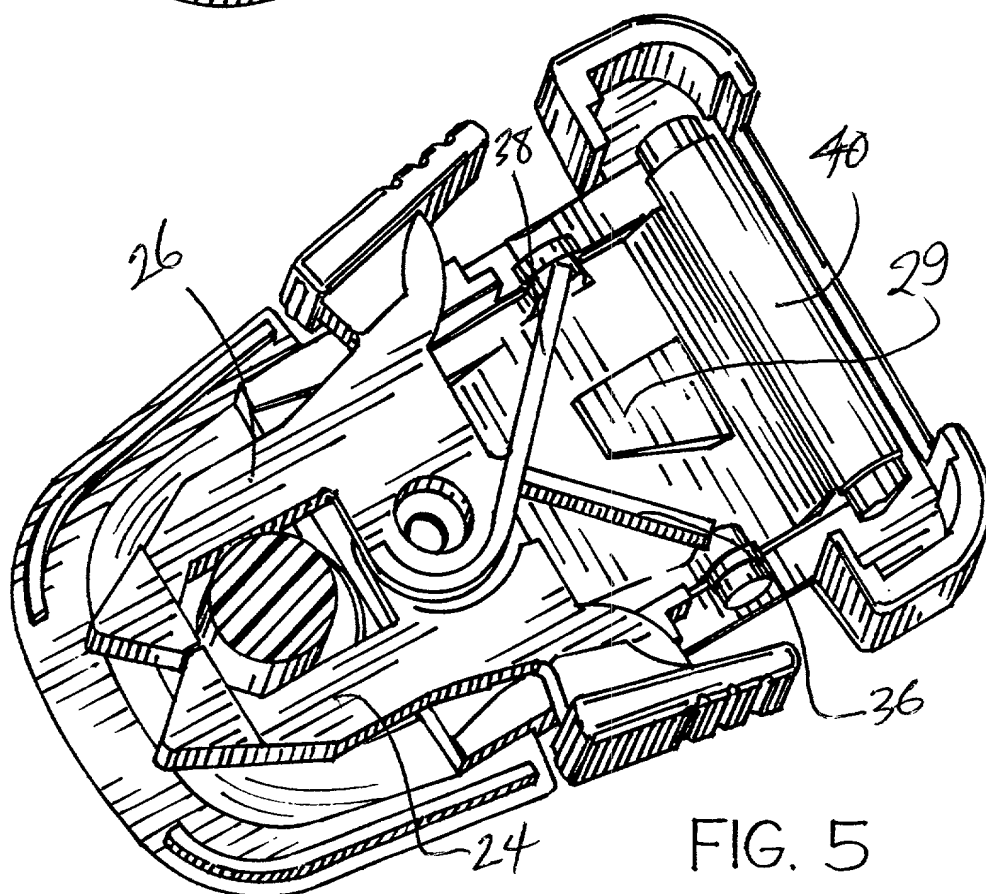
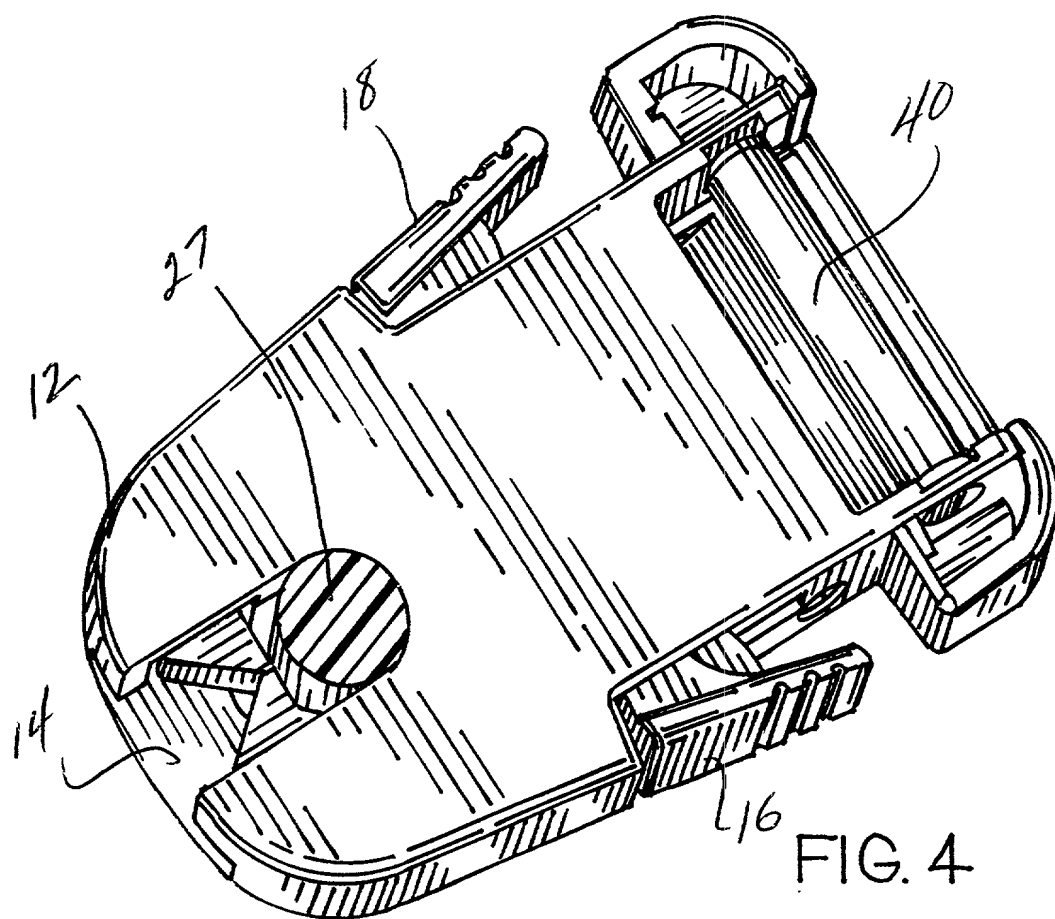


FIG. 3



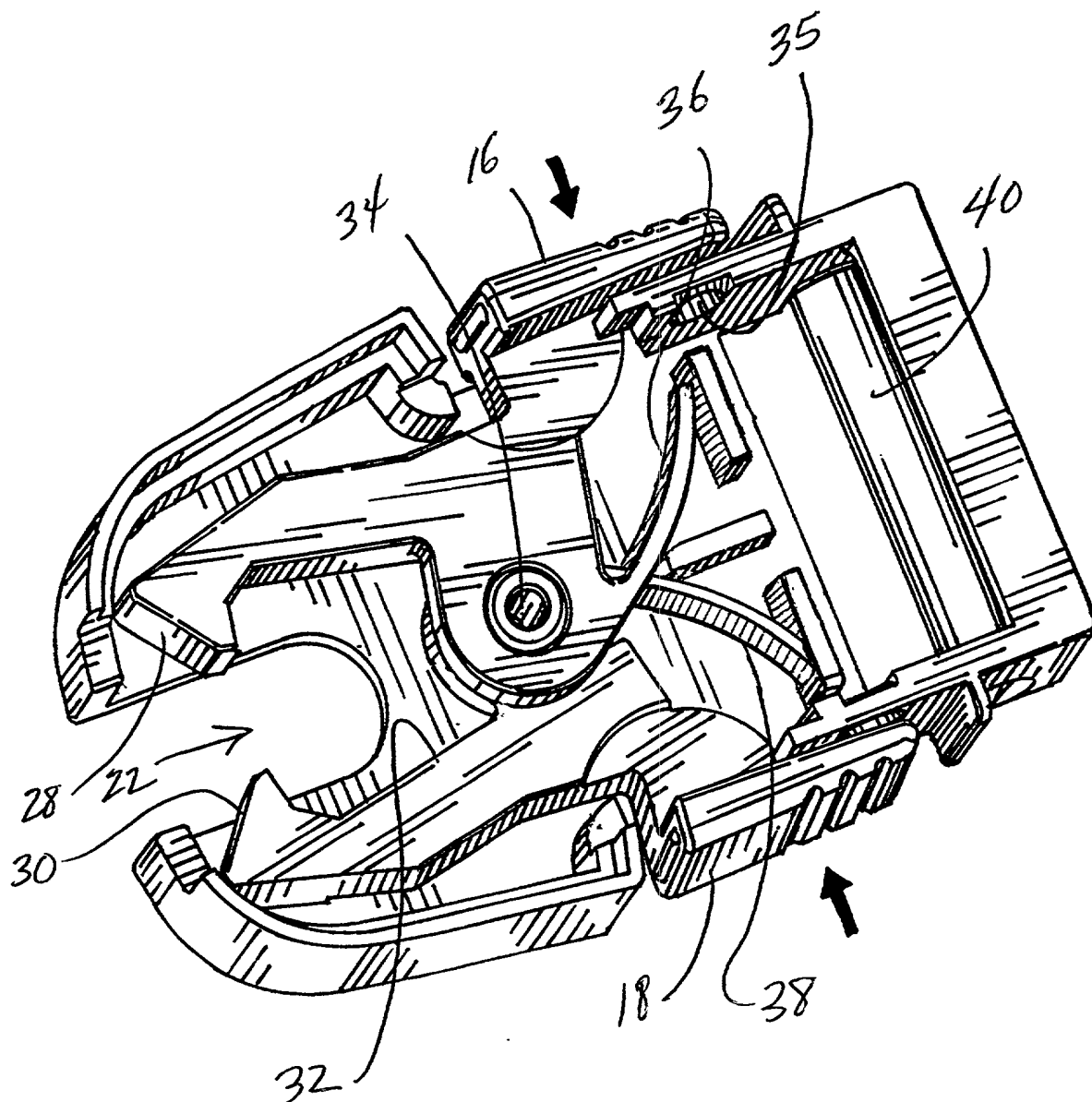


FIG. 6

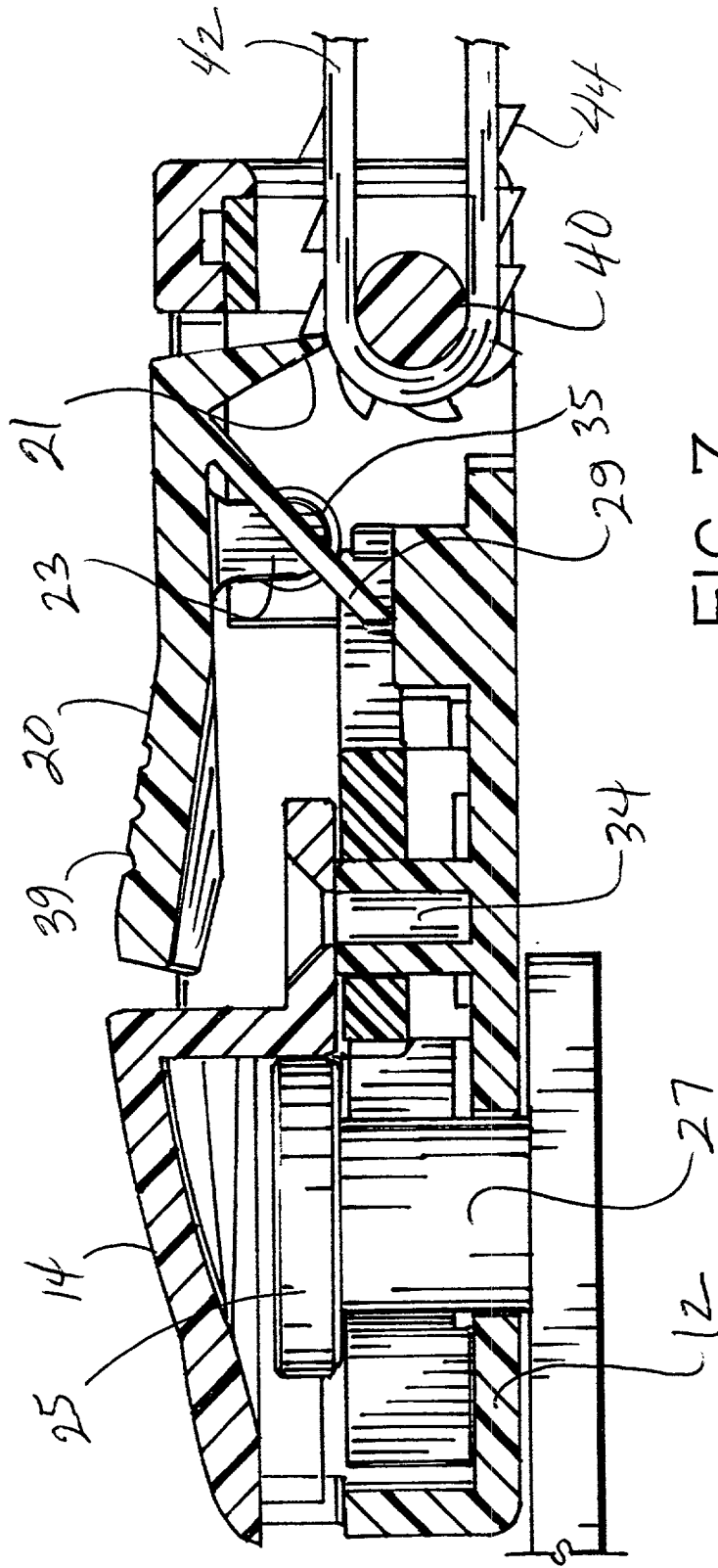
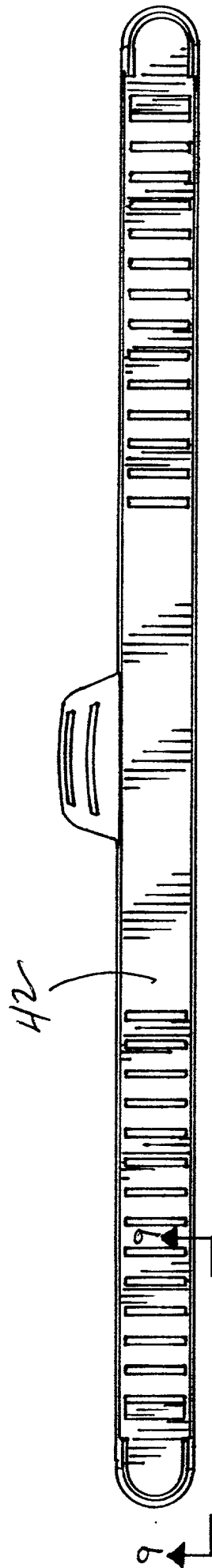
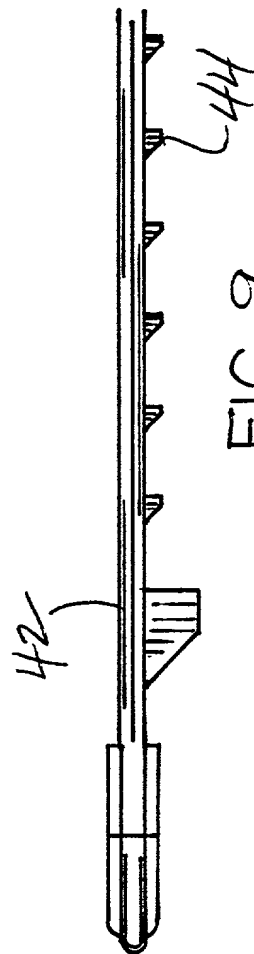


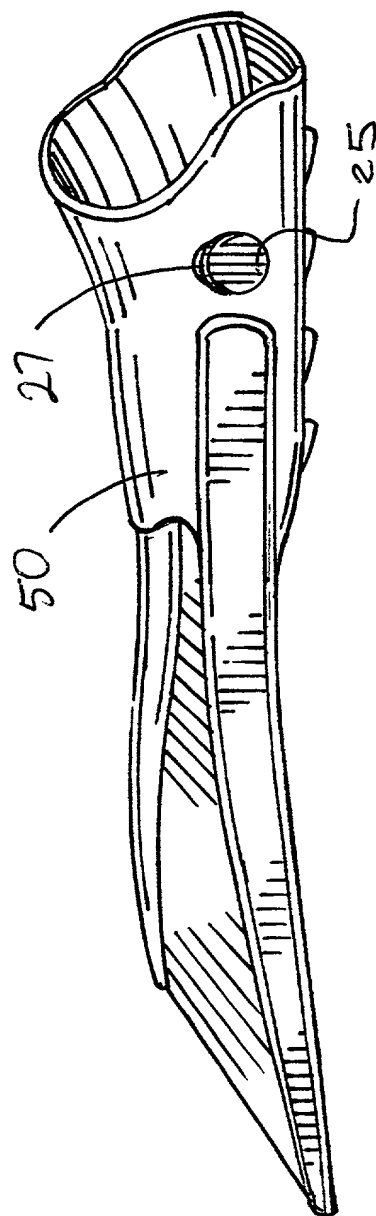
FIG. 7



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**DECLARATION FOR UTILITY OR
DESIGN
PATENT APPLICATION
(37 CFR 1.63)**☒ Declaration
Submitted with Initial
Filing OR ☐ Declaration
Submitted after Initial
Filing (surcharge
(37 CFR 1.16 (e))
required)

Attorney Docket Number ATOMIC-10

First Named Inventor Douglas J. Toth

COMPLETE IF KNOWN

Application Number /

Filing Date January 13, 2000

Group Art Unit

Examiner Name

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

STRAP CONNECTING BUCKLE

the specification of which

☒ is attached hereto
OR

(Title of the invention)

☐ was filed on (MM/DD/YYYY)

as United States Application Number or PCT International

Application Number and was amended on (MM/DD/YYYY) (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached?	
				YES	NO
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:
I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)	<input type="checkbox"/> Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

[Page 1 of 2]

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DECLARATION — Utility or Design Patent Application

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application or PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number (if applicable)

☐ Additional U.S. or PCT international application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

☒ Customer Number

1054

OR

☒ Registered practitioner(s) name/registration number listed below

Place Customer
Number Bar Code
Label here

Name	Registration Number	Name	Registration Number
LEONARD TACHNER	26,344		

☐ Additional registered practitioner(s) named on supplemental Registered Practitioner Information sheet PTO/SB/02C attached hereto.

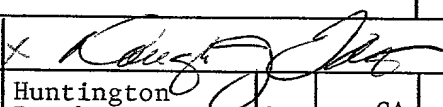
Direct all correspondence to: ☐ Customer Number OR ☒ Correspondence address below

Name	LEONARD TACHNER, A PROFESSIONAL LAW CORPORATION					
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Address						
City	IRVINE	State	CA	ZIP	92614-6364	
Country	USA	Telephone	(949) 752-8525		Fax	(949) 955-2415

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:

☐ A petition has been filed for this unsigned inventor

Given Name (first and middle (if any))		Family Name or Surname					
Douglas J.		Toth					
Inventor's Signature					Date	1/12/2000	
Residence: City	Huntington Beach	State	CA	Country	USA	Citizenship	USA
Post Office Address	8422 Dallas Circle						
Post Office Address	Huntington Beach, California 92646						
City	Huntington Beach	State	CA	ZIP	92646	Country	USA

☐ Additional inventors are being named on the _____ supplemental Additional Inventor(s) sheet(s) PTO/SB/02A attached hereto